

**WHAT IS CLAIMED IS:**

1. Apparatus for electro-chemical deposition on a substrate, comprising:  
an annular conductive body adapted to support the substrate and  
having at least one pin receiving pocket formed therein; and  
at least one electrical contact pin having a portion brazed in the  
receiving pocket, the contact pin adapted to electrically bias the substrate.
2. The apparatus of claim 1, wherein the contact pin is an annular ring.
3. The apparatus of claim 1, wherein the contact pin is a plurality of arc  
segments.
4. The apparatus of claim 1, wherein the contact pin is a plurality of  
cylindrical posts.
5. The apparatus of claim 1, wherein the conductive body further  
comprises:  
a first surface;  
a shoulder coupled to the first surface; and  
a substrate support surface extending inward from the shoulder and  
supporting the electrical contact pin thereon, the substrate support surface  
and shoulder defining a substrate receiving pocket.
6. The apparatus of claim 1, wherein the contact pin is comprised  
platinum or platinum alloy.
7. The apparatus of claim 1 further comprising:  
a dielectric covering at least partially encapsulating the conductive  
body.

8. The apparatus of claim 7, wherein the contact pin further comprises:  
a portion extending from the conductive body and having a contact surface free from the dielectric covering.
9. Apparatus for electro-chemical deposition on a substrate, comprising:  
an annular conductive body adapted to support the substrate and having at least one pin receiving pocket formed therein;  
at least one electrical contact pin having a portion brazed in the receiving pocket, the contact pin adapted to electrical bias the substrate proximate the substrate's perimeter; and  
a first seal disposed inward of the electrical contact pin and providing a seal with the conductive body.
10. The apparatus of claim 9, wherein the contact pin is an annular ring.
11. The apparatus of claim 9, wherein the contact pin is a plurality of arc segments.
12. The apparatus of claim 9, wherein the contact pin is a plurality of cylindrical posts.
13. The apparatus of claim 9, wherein the conductive body further comprises:  
a first surface;  
a shoulder coupled to the first surface;  
a substrate support surface extending inward from the shoulder and supporting the electrical contact pin thereon, the substrate support surface and shoulder defining a substrate receiving pocket; and  
an inner ring surface disposed radially inward of the substrate support surface, the inner ring surface in sealing communication with the first seal.

14. The apparatus of claim 9, wherein the contact pin is comprised platinum or platinum alloy.
15. The apparatus of claim 9 further comprising:  
a dielectric covering at least partially encapsulating the conductive body.
16. The apparatus of claim 15, wherein the contact pin further comprises:  
a portion extending from the conductive body and having a contact surface free from the dielectric covering.
17. Apparatus for electro-chemical deposition on a substrate, comprising:  
an annular conductive body adapted to support the substrate and having at least one pin receiving pocket formed therein;  
a dielectric covering at least partially encapsulating the conductive body; and  
at least one electrical contact pin having a portion brazed in the receiving pocket, the contact pin adapted to electrical bias the substrate proximate the substrate's perimeter and having an exposed portion extending from the conductive body and having a contact surface free from the dielectric covering.
18. A method of fabricating a contact ring utilized for substrate plating, the method comprising:  
inserting a portion of at least one contact pin in a pin receiving pocket formed in an annular conductive body to form an assembly; and  
brazing the contact pin to the conductive body in a manner that excludes gases between the inserted portion of the contact pin and the pin receiving pocket.
19. The method of claim 18, wherein the step of inserting further comprises:

inserting a plurality of contact pins into the conductive body along a common radius.

20. The method of claim 18 further comprising:  
stress relieving the contact pin and conductive body assembly.
21. The method of claim 20, wherein the step of stress relieving the assembly further comprises:  
heating the assembly to a temperature of about 550 degrees Celsius and 600 degrees Celsius for about 20 to about 60 minutes.
22. The method of claim 20 further comprising:  
flowing the braze between the contact pin and conductive body.
23. The method of claim 22, wherein the step of flowing the braze further comprises:  
heating the assembly to a temperature that flows the braze between the contact pin and conductive body.
24. The method of claim 18 further comprising  
shaping an exposed portion of the contact pins to a common elevation relative to the conductive body.
25. The method of claim 18 further comprising  
encapsulating at least a portion of the conductive body with a dielectric material.
26. The method of claim 25, where a contact surface of the contact pin is free of the dielectric material.
27. A method of fabricating a contact ring utilized for substrate plating, the method comprising:

inserting a portion of at least one contact pin in a pin receiving pocket formed in an annular conductive body to form an assembly;

brazing the contact pin to the conductive body in a manner that excludes gases between the inserted portion of the contact pin and the pin receiving pocket; and

shaping an exposed portion of the contact pins to a common elevation relative to the conductive body.

28. A method of fabricating a contact ring utilized for substrate plating, the method comprising:

inserting a portion of at least one contact pin in a pin receiving pocket formed in an annular conductive body to form an assembly;

brazing the contact pin to the conductive body in a manner that excludes gases between the inserted portion of the contact pin and the pin receiving pocket;

stress relieving the contact pin and conductive body assembly by holding the assembly at a first temperature;

flowing the braze between the contact pin and conductive body by elevating the temperature of the assembly from the first temperature to a second temperature; and

shaping an exposed portion of the contact pins to a common elevation relative to the conductive body.

29. The method of claim 28, wherein the step of inserting further comprises;

inserting a plurality of contact pins into the conductive body along a common radius.

30. The method of claim 28, wherein the step of stress relieving the assembly further comprises:

heating the assembly to a temperature of about 550 degrees Celsius and 600 degrees Celsius for about 20 to about 60 minutes.

31. The method of claim 28 further comprising  
encapsulating at least a portion of the conductive body with a dielectric material.
32. The method of claim 31, where a contact surface of the contact pin is free of the dielectric material.
33. A method of fabricating a contact ring utilized for substrate plating, the method comprising:  
inserting a portion of at least one contact pin in a pin receiving pocket formed in an annular conductive body to form an assembly;  
brazing the contact pin to the conductive body in a manner that excludes gases between the inserted portion of the contact pin and the pin receiving pocket;  
stress relieving the contact pin and conductive body assembly by holding the assembly at a first temperature;  
flowing the braze between the contact pin and conductive body by elevating the temperature of the assembly from the first temperature to a second temperature;  
encapsulating at least a portion of the conductive body with a dielectric material; and  
shaping an exposed portion of the contact pins to a common elevation relative to the conductive body, wherein at least a contact surface of the exposed portion is free of the dielectric material.
34. The method of claim 33, wherein the step of inserting further comprises;  
inserting a plurality of contact pins into the conductive body along a common radius.

35. The method of claim 33, wherein the step of stress relieving the assembly further comprises:

heating the assembly to a temperature of about 550 degrees Celsius and 600 degrees Celsius for about 20 to about 60 minutes.

36. The method of claim 33, wherein the step of shaping removes dielectric material from the exposed portion of the contact pin.

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